Clinical Practice Guideline

Early HIV Infection

Quick Reference Guide for Clinicians

Number 7

Managing Early HIV Infection

Office of Minority Health
Resource Center
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- Disclosure of HIV Status
- Evaluation and Medical Management in Adults
- Caring for Adolescents
- Evaluation and Medical Management in Infants and Children
- Case Management of Persons Living with HIV
- Algorithms

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U.S. Department of Health and Human Services
Public Health Service
Agency for Health Care Policy and Research

Attention clinicians:

The *Clinical Practice Guideline* on which this *Quick Reference Guide for Clinicians* is based was developed by an interdisciplinary, private-sector panel comprising health care professionals and consumer representatives. Panel members were:

Wafaa El-Sadr, MD, MPH (Co-Chair)

James M. Oleske, MD, MPH (Co-Chair)

Bruce D. Agins, MD

Kay Bauman, MD, MPH

Carol Brosgart, MD

Gina M. Brown, MD

Jaime V. Geaga, PA-C

Deborah Greenspan, DDS

Karen Hein, MD, BMS

William L. Holzemer, RN, PhD

Rudolph E. Jackson, MD

Michael K. Lindsay, MD, MPH

Harvey J. Makadon, MD

Martha W. Moon, MSN

Claire A. Rappoport, MS

Walter W. Shervington, MD

Lawrence C. Shulman, MSW

Constance B. Wofsy, MD, MA

For a description of the guideline development process and information about the sponsoring agency (Agency for Health Care Policy and Research), see the *Clinical Practice Guideline, Evaluation and Management of Early HIV Infection* (AHCPR Publication No. 94-0572). To receive another copy of the *Clinical Practice Guideline,* this Quick *Reference Guide* for Clinicians (AHCPR Publication No. 94-0573), or the *Consumer Guides, HIV and Your Child* (AHCPR Publication No. 94-0576) and *Understanding HIV* (AHCPR Publication No. 94-0574), call toll free: (800) 342-AIDS or write to:

AHCPR HIV Guideline
CDC National Clearinghouse
Post Office Box 6003
Rockville, MD 20849-6003.

Note: This *Quick Reference Guide for Clinicians* contains excerpts from the *Clinical Practice Guideline,* but users should not rely on these excerpts alone. Clinicians should refer to the complete *Clinical Practice Guideline* for more detailed analysis and discussion of the available research, critical evaluation of the assumptions and knowledge of the field, health care decision-making, and references.

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Managing Early HIV Infection

Purpose and Scope

According to the World Health Organization, 30 to 40 million men, women, and children around the world will be infected with the human immunodeficiency virus (HIV) by the year 2000. By the turn of the century, acquired immunodeficiency syndrome (AIDS) will be the third most common cause of death in the United States. The increasing presence of HIV in every community necessitates that primary care providers become involved in and knowledgeable about caring for patients with HIV. The growing population of individuals living with HIV and their families also need guidance in seeking and accessing appropriate care.

This *Quick Reference Guide* presents highlights from the *Clinical Practice Guideline on Evaluation and Management of Early HIV Infection.* The *Guideline* focuses on the early stages of HIV infection because early recognition of HIV is becoming more common, and medical intervention in the early stages of HIV infection may be most effective in delaying life-threatening symptoms. In addition, and perhaps most important to primary care providers, early intervention and education often increase patient involvement in treatment, improve access to services, and slow the spread of the disease.

This *Quick Reference Guide* and the *Guideline* were developed both for primary care providers and those who receive care. In the early years of the epidemic, the most severe complications of HIV infection received the most attention. The focus has since evolved to emphasize outpatient care, health maintenance, prevention of hospitalization, and integration of the patient and loved ones into a system that provides supportive services. Thus, primary care providers must be prepared to diagnose HIV infection, disclose test results, and evaluate and manage early HIV infection.

Because the subject of early HIV care is so broad and complex, the *Guideline* is limited to selected elements of adult and pediatric care that are particularly significant for practitioners: disclosure of HIV status, monitoring of CD4 lymphocyte counts; prevention of *Pneumocystis carinii* pneumonia (PCP) and tuberculosis; initiation of antiretroviral therapy; treatment of syphilis; eye and oral care; performance of Papanicolaou (Pap) smears; diagnosis of HIV infection in infants and children; monitoring of CD4 lymphocyte counts and initiation of antiretroviral therapy in infants and children; preventive therapy for PCP and assessment of neurologic problems in HIV-infected children;

pregnancy counseling; and development of a comprehensive case management system for the patient that covers both social services and health care. Algorithms, found at the back of this *Quick Reference Guide,* show the sequence of events related to evaluating and managing early HIV infections in adults, adolescents, infants, and children.

Because advances in the management of HIV infection are occurring at a rapid pace, providers should seek frequent updates.

Published data were used to the greatest extent possible to formulate the recommendations in the *Guideline.* In the *Guideline* and this *Quick Reference Guide,* each recommendation is rated and labeled according to the degree to which it is data-based:

- **Supported by evidence (SPE):** Evidence from at least one well-designed, published, randomized controlled trial in the population for which the recommendation is made; or from at least one well-designed, published population-based study.
- **Suggested by evidence (SGE):** Consistent results from other study designs or studies in populations other than that for which the recommendation is made.
- **Expert opinion (EO):** Expert clinical experience described in the literature or consensus of panel members.

Disclosing HIV Status

Initial disclosure of HIV test results to the patient sets the foundation for the patient's acceptance, knowledge base, and attitudes about his or her condition. This in turn may dramatically affect patients' quality of life and their ability to care for themselves. The manner in which the test results are communicated to the patient is, therefore, extremely important.

Provider Disclosure to Patient, Parent, or Guardian

- Before disclosing the results of HIV testing to a patient or the parent or guardian of a child who has been tested, assess the degree to which that person is prepared to receive the results. Consider the person's social, demographic, cultural, and psychological characteristics, which may be important factors in his or her ability to cope with the test results. (SGE)
- Disclosure and accompanying counseling should take place face-to-face. Discuss the natural history of HIV infection, the potential effects of HIV infection on physical and mental health, prevention of further HIV transmission, the role of health maintenance, and the availability of treatments. For adolescents, encourage the presence of a supportive adult. (SGE)
- Disclosure counseling provides an opportunity both to provide immediate interventions and to involve the patient in medical, mental health, social, and family-support networks. Immediate

interventions should include assessing the patient for the potential for violence to himself/herself or others; ensuring that the patient receives a thorough evaluation, staging, and initial care; informing the patient of available services; scheduling the next appointment; addressing prevention of further HIV transmission; assessing the availability of a key support person (e.g., lover, partner, significant other, roommate, child, friend, parents, spouse, spiritual support person) and other care providers; and providing information on local and national sources of support. (EO)

- The provider should make referrals for any needed services that cannot be obtained on site. (EO)

Provider Disclosure to Agencies

- Providers should know their State's HIV reporting requirements and educate patients about them (see page 4 for a State-by-State listing of HIV reporting requirements). (EO)
- Providers should ensure that patients are aware of the extent and limits of confidentiality of HIV test results. (EO)

Patient Disclosure to Other Individuals and Agencies

Primary care providers should help their patients appreciate why disclosure of their HIV infection may be useful in some situations and detrimental in others. In some States, disclosure of HIV infection enables a patient to become eligible for entitlement benefits.

Disclosure to significant others may result in increased social support; it may also prompt a significant other to consider whether to seek HIV testing. Conversely, disclosure may result in housing discrimination, loss of employment or of child custody, reduction or cessation of health benefits, or rejection by a potential employer or a significant other.

- Through counseling and referrals as needed, the provider should explain and help the patient to understand the advantages and disadvantages of disclosing HIV status to others, including the potential for discrimination against persons with HIV infection. (EO)
- The patient should be strongly encouraged to disclose his or her HIV status to significant others, particularly sexual and needle-sharing partners. At the same time, providers must be aware of the potential for domestic violence when one or both partners has HIV infection. (SGE)

Parent or Guardian Disclosure to Infected Children and Other Family Members

- The provider should assist parents and guardians in making decisions regarding disclosure of HIV infection to an infected child or adolescent and other family members. This assistance should consist of educating parents and guardians, and working with them to ensure that needed support services are in place during the process of disclosure. (EO)

Reporting requirements for human immunodeficiency virus (HIV) infection

By name	Anonymous	Not Required
Alabama	Georgia	Alaska
Arizona	Iowa	California
Arkansas	Kansas	Connecticut
Colorado	Kentucky	Delaware
Idaho	Maine	Florida
Illinois	Montana	Hawaii
Indiana	New Hampshire	Louisiana
Michigan	Oregon	Maryland[2]
Minnesota	Rhode Island	Massachusetts
Mississippi	Texas	Nebraska
Missouri		New Mexico
Nevada		New York
New Jersey[1]		Pennsylvania
North Carolina		Vermont
North Dakota		Washington[2]
Ohio		District of Columbia
Oklahoma		
South Carolina		
South Dakota		
Tennessee[1]		
Utah		
Virginia		
West Virginia		
Wisconsin		
Wyoming		

[1] Implementation date, January, 1992.

[2] Requires reports of symptomatic HIV infection by name.

Note: Current as of March 1, 1993. All States require reporting of acquired immunodeficiency syndrome (AIDS) cases by name at the State/local level.

Early identification of HIV infection allows the provider to conduct a thorough medical and psychological assessment to define the immediate and long-term needs of the patient. A detailed medical history is a crucial first step in treatment and should include a review of the HIV test result, previous infections, and sexual and substance use history.

A comprehensive physical examination, including assessments of eye and oral health, neurologic status, skin and lymph nodes, and HIV-associated signs and symptoms, accompanied by open discussion of the patient's concerns and fears, allows the provider to define the stage of HIV infection, determine the best treatment, and lay the foundation for an effective partnership with the patient.

Algorithm 1 presents an overview of the selected elements of early HIV care covered in the Guideline and this Quick Reference Guide. Tables 1, 2, and 3 (see pages 21-24) list the drugs discussed here and in the Guideline, as well as dosages and adverse effects.

Monitoring CD4 Lymphocytes and Initiating Antiretroviral Therapy and PCP Prophylaxis

The assessment of immune status is a key element of the patient's initial evaluation. Measuring the number of CD4 lymphocytes is the primary test for monitoring immune function. It establishes the stage of HIV infection, the prognosis of disease, and helps to determine the appropriateness of initiating antiretroviral therapy[1] and prophylaxis for PCP and other opportunistic infections.

Steps for carrying out this evaluation are presented in Algorithm 2. CD4 testing and specific treatments for pregnant women are shown in Algorithm 3. Other recommendations are listed here:

- The immune status of an HIV-infected individual should be assessed at the time of his or her initial medical evaluation. A CD4 lymphocyte count should be the primary test for monitoring immune function. (EO)
- The number of CD4 cells should be measured once every 6 months when the CD4 count is greater than 600 cells/μl and at least every 3 months when the CD4 count is between 200 cells/μl and 600 cells/μl. More frequent measurements may be desirable if there is evidence of rapid decline in cell count of if the patient's symptoms become more severe. (EO)
- Ongoing measurement of CD4 cells below 200 cells/μl at least every 3 months may be necessary to track the effects of antiretroviral therapy and to

[1] Information included in this guide may not represent FDA approval or approved labeling for the particular products or indications in question. Specifically, the terms "safe" and "effective" may be not synonymous with the FDA-defined legal standards for product approval.

determine the appropriate time for initiation of new preventive and therapeutic interventions. (EO)

- Antiretroviral therapy with zidovudine (the major antiretroviral therapy, formerly known as AZT, now ZDV) should be discussed with all HIV-infected individuals whose CD4 counts are less than 500 cells/μl. (SGE)
- Those patients who do not tolerate ZDV or have clinical progression of HIV infection on this treatment, should be offered therapy with didanosine (ddI) or dideoxycitidine (ddC). (SPE)
- Those patients who are tolerating ZDV may remain on ZDV; consider switching to ddI after a period of time, as some evidence suggests a benefit from this change. (EO)
- PCP prophylaxis should be initiated if any of the following conditions is met: (1) the CD4 count is less than 200 cells/μl (SPE); (2) there has been a prior episode of PCP (SPE); or, (3) oral candidiasis or constitutional symptoms such as unexplained fevers are present (SGE).
- Oral trimethoprim-sulfamethoxazole (TMP-SMX) is the preferred agent for PCP prophylaxis. (SPE)
- Other effective prophylactic agents include aerosolized pentamidine, oral dapsone, and a combination of oral dapsone and pyrimethamine. Consider their advantages and disadvantages in determining whether to use them. (SPE)
- In HIV-infected pregnant women, CD4 counts should be determined at the time of presentation for prenatal care. CD4 counts should be determined at delivery for those women who have received no prenatal care. (EO)
- If the count is 600 cells/μl or above, it need not be repeated during pregnancy, unless indicated by clinical symptoms. If the count is 200 cells/μl or less, it need not be repeated during pregnancy, according to current data. If the count is between 200 cells/μl and 600 cells/μl, it should be repeated each trimester. (SGE)
- Discuss antiretroviral therapy with ZDV with HIV-infected pregnant women whose CD4 lymphocyte counts are less than 500 cells/μl. (SGE)
- Providers should inform HIV-infected pregnant women of the benefits of early ZDV therapy and the potential for risks to the mother and fetus. (SGE)
- HIV-infected pregnant women should receive PCP prophylaxis according to the same guidelines used for other adults. (SGE)

Testing and Preventive Therapy for Tuberculosis Infection

The reemergence of tuberculosis (TB) as a major public health concern is especially important for HIV-infected individuals because the immunosuppression caused by the virus permits *Mycobacterium tuberculosis* infection to progress at an accelerated pace, and they are more likely to develop active TB. TB merits special consideration in the treatment of HIV-infected patients because it is readily communicable to others, management is different for HIV-infected patients than for non-HIV-infected patients, and, unlike many other opportunistic infections, it is preventable and may be curable if treated promptly.

Screening

- The medical history for all HIV-infected individuals should include the following steps (see Algorithm 4): (a) assessment of previous TB infection or disease, past treatment or preventive therapy, and history of exposure to *M. tuberculosis;* (b) assessment of the risk for *M. tuberculosis* infection, including predisposing social conditions (e.g., household contacts, country of origin, homelessness, history of incarceration, residence in a congregate living situation); and (c) suggestive symptoms (e.g., cough, hemoptysis, fever, night sweats, weight loss). During the physical examination, the provider should seek indications of active disease (e.g., abnormal pulmonary signs, documented weight loss). (SGE)
- The medical history for all HIV-infected individuals should also include an assessment of health and social conditions that may affect an individual's ability to complete a course of therapy, specifically, repeated failure to keep medical appointments, alcoholism, mental illness, and substance use. (SGE)
- All HIV-infected individuals, including those who have received BCG vaccination, should be screened, using purified protein derivative (PPD) for infection with *M. tuberculosis* during their initial evaluation. (SGE)
- All HIV-infected individuals should be screened for anergy using two control antigens in addition to PPD during their initial evaluation. (SGE)
- All HIV-infected individuals who are PPD-positive or anergic should receive a chest x-ray and clinical evaluation, and those who have symptoms suggestive of TB should receive a chest x-ray, regardless of their PPD or anergy status. (SGE)
- PPD and anergy testing should be repeated annually in persons who are neither PPD-positive nor anergic on initial evaluation. Persons who reside in areas where TB prevalence is high should be tested every 6 months. (SGE)
- All PPD-negative or anergic HIV-infected individuals who have recently been exposed to persons with suspected or confirmed TB should be immediately

tested with PPD and anergy antigens. Repeat testing should be performed in 3 months. (SGE)

- PPD testing should be performed by the Mantoux method, using an intradermal injection of 0.1 ml 5 TU PPD (intermediate strength). (SGE)
- Reactions should be assessed by a trained observer between 48 and 72 hours after injection. Reactions of 5 mm or greater induration should be considered positive in persons with HIV infection, regardless of prior BCG vaccination. (SGE)
- Two of the following three antigens can be used for anergy testing: candida, mumps, or tetanus toxoid. Any degree of induration observed in response to intradermal injection of these antigens constitutes a positive reaction and indicates that the individual is not anergic. (SGE)
- Chest x-rays should be obtained to exclude the presence of active pulmonary TB in all HIV-infected individuals who are PPD-positive, anergic, or have symptoms suggestive of TB. (SGE)
- If the chest x-ray reveals any abnormality, multiple sputum smears and cultures should be performed. (SGE)
- If a sputum smear is positive, the patient should be started on anti-TB therapy immediately, pending culture results. Acid-fast bacillus (AFB) isolation should be initiated promptly if the patient is coughing. If the sputum smears are negative and if there is no other etiology for the abnormal chest x-ray, bronchoscopy should be performed and empiric anti-TB therapy should be initiated, pending the results of the mycobacterial culture. AFB isolation should be maintained until the diagnosis is confirmed by smear or culture. (SGE)
- In many of these clinical situations, diagnostic evaluation and management will need to be individualized. Consultation with an infectious disease or pulmonary specialist may be necessary. (SGE)

Preventive Therapy

- Preventive therapy for TB should proceed according to the following protocol: (1) isoniazid (INH) preventive therapy should be initiated and continued for 12 months in all HIV-infected individuals who have a positive PPD test but do not have active disease, regardless of their age; (2) preventive therapy should be strongly considered for anergic patients who are known contacts of patients with TB and for anergic patients belonging to groups in which the prevalence of TB infection is 10 percent or higher. Such individuals include injection drug users, prisoners, homeless persons, persons living in congregate housing, migrant laborers, and persons born in countries where rates of TB are high. (SGE)
- Clinicians should consider factors specific to their geographic areas, including the incidence and prevalence of TB

infection, when considering the decision to start preventive therapy. (SGE)

- In persons with HIV who are exposed to drug-resistant strains of *M. tuberculosis,* an alternative preventive therapy should be considered. Consultation should be sought with a pulmonary or infectious disease specialist. (SGE)
- The presence of AFB on sputum smear should prompt immediate empiric anti-TB therapy tailored to community drug-susceptibility patterns, pending final determination of drug susceptibility testing. (SGE)

Pregnant Women

- The evaluation and management of *M. tuberculosis* infection in pregnant women should be performed as described in the recommendations above. Preventive INH therapy is not contraindicated in pregnant women and should be initiated according to these recommendations. (SGE)
- In asymptomatic women, chest x-ray should be performed only after the first trimester, and a lead apron shield should be used. In women with symptoms that suggest TB, x-rays should be performed irrespective of stage of pregnancy. A lead apron shield should be used. (SGE)

Improving Adherence to Regimens of Preventive Therapy for TB

The failure of patients to complete treatment of their *M. tuberculosis* infection is a common and serious concern because these patients are at increased risk that the infection will progress to the disease, tuberculosis. Additionally, these individuals may infect others and may develop drug-resistant strains of *M. tuberculosis.* Specific recommendations include:

- TB prophylaxis and treatment regimens should be closely monitored by health care providers to ensure completion of the entire course of therapy. (SGE)
- Providers should educate their patients about the importance of completing the full course of anti-TB therapy, and should recommend the simplest appropriate regimen. (EO)
- Case management and directly observed therapy should be used when needed to ensure successful completion of therapy. (EO)

Testing and Treatment for Syphilis

The incidence of HIV infection and syphilis have both increased dramatically in the last 10 years, and co-infection is not uncommon. It is crucial to know whether both are present because HIV infection may alter the natural history, laboratory diagnosis, and patient's response to syphilis therapy.

Sexually experienced adolescents have a high rate of sexually transmitted diseases (STDs). A sexual history, screening pelvic or

genital examination, and laboratory assessment are indicated for all adolescents who have had sexual intercourse, including those who are asymptomatic.

Recommendations for the assessment and treatment of syphilis in HIV-infected patients are summarized in Algorithm 5. Specific recommendations include:

Screening and Diagnosis

- All HIV-infected and sexually experienced adults and adolescents should be evaluated for syphilis. (SGE)
- Initial serologic screening for current or past syphilis should be performed with nontreponemal tests (i.e., the rapid plasma reagin [RPR] or the Venereal Disease Laboratories [VDRL] test). (SGE)
- All reactive nontreponemal tests should be followed by a specific treponemal test (i.e., the microhemagglutination assay for *Treponema pallidum* [MHA-TP] or the fluorescent treponemal antibody absorption [FTA-ABS] test). (SGE)
- In patients with clinical findings suggestive of syphilis who have nonreactive nontreponemal tests, the serum should be diluted to overcome the possibility that the high antibody levels have produced a prozone phenomenon. (SGE)
- In patients with primary syphilis, both nontreponemal and treponemal serologic tests may be nonreactive. If primary syphilis is suspected, dark-field microscopy and direct fluorescent antibody staining for *T. pallidum* (DFA-TP) from a scraping of suspected lesions should be performed. (SGE)
- If a dark-field examination cannot be done and primary syphilis is suspected, empiric treatment should be instituted. (SGE)
- Evaluation of the cerebrospinal fluid (CSF) for evidence of neurosyphilis may be prudent for all HIV-infected individuals with positive treponemal serologies. (SGE)
- HIV-infected pregnant women should be screened for syphilis with a nontreponemal test (RPR or VDRL) at entry into prenatal care, during the third trimester, at delivery, and at any time when they have been exposed to or present with symptoms or signs of an STD. (SGE)

Management

- CSF evaluation should be discussed with and encouraged in all HIV-infected individuals with primary syphilis. It should be recommended to all HIV-infected patients with secondary syphilis, latent syphilis, or infection of unknown duration. (EO)
- If neurosyphilis is excluded, primary, secondary, early latent, and late latent syphilis, as well as infection of unknown duration, should be treated with three weekly doses of intramuscular benzathine penicillin, 2.4 million units. (SGE)

- HIV-infected individuals with abnormal CSF findings (presence of cells, increased protein, or positive VDRL test results) should be treated with a regimen effective against neurosyphilis: intravenous (IV) aqueous penicillin, 2 to 4 million units every 4 hours for 10 to 14 days. (SGE)
- Treatment for presumptive neurosyphilis should be encouraged when the CSF cannot be evaluated. (EO)
- Patients with syphilis and a reported reaction to penicillin should be referred to an allergist or infectious disease specialist. (EO)
- All HIV-infected individuals should have a nontreponemal serologic test for syphilis performed at least annually. In addition, serologic tests should be performed after exposure to or diagnosis of any STD. (EO)
- In HIV-infected individuals who have been diagnosed with and treated for syphilis, followup nontreponemal serologies should be performed at 1, 2, 3, 6, 9, and 12 months post-treatment and annually thereafter. The same test should be used each time, because titers are not comparable between different nontreponemal tests. (EO)
- HIV-infected individuals diagnosed with syphilis should be evaluated for other STDs and substance use and should be managed accordingly. The diagnosis of syphilis or other STDs in HIV-infected individuals should alert the provider to counsel the patient on the importance of safe-sex practices. (EO).
- Treatment and followup of syphilis are the same for pregnant women as for nonpregnant adults. To reliably prevent congenital syphilis, penicillin therapy must be completed at least 4 weeks prior to delivery. All infants born to women with syphilis should be assessed for congenital syphilis and managed as appropriate. (SPE)

Oral Examinations

HIV-infected patients experience several unique oral conditions, including frequent oral lesions and in some patients, unusually rapid and destructive periodontal disease. As a result, special attention should be paid to their routine and specialized oral care. Oral lesions, in particular, are important because they may provide the only early indication of HIV infection, and they are key in classifying the stage of HIV disease. Recommendations for oral care include the following:

- Discuss with patients the importance of oral care, including descriptions of common HIV-related oral lesions and associated symptoms.
- Perform an oral examination during every physical examination (EO); all oral mucosal surfaces should be carefully examined. (SGE)
- Recommend that patients have twice-yearly dental examinations; if oral lesions or other problems appear, dental followup should be more frequent. (SGE)

- Primary care providers and dentists should be trained to identify and treat oral lesions associated with HIV infection. (EO)

Eye Examinations

While there are a number of ocular complications associated with HIV disease, they generally occur at a late stage of the disease. Cytomegalovirus retinitis (CMV retinitis) is the most common opportunistic infection associated with visual loss in HIV infection. Providers should take the following steps regarding eye care:

- Take a careful history of any visual disturbances and perform an eye examination, including funduscopy, during the patient's routine visits. Educate the patient about CMV retinitis and visual disturbances (e.g., blurring or vision loss) and the importance of monitoring visual symptoms to maximize early identification. (EO)
- Recommend to patients that they be examined by a qualified eye doctor according to the following schedule: every 3 to 5 years at ages 20 to 39; every 2 to 4 years at ages 40 to 64; every 1 to 2 years at ages 65 and over. More frequent examinations will be necessary if problems develop. (EO)
- Refer patients with any visual symptoms suggestive of CMV to an ophthalmologist for confirmation of diagnosis. (SGE)

Pap Smears

With the increasing impact of the HIV epidemic on women, the evaluation of HIV-associated gynecologic conditions and the provision of appropriate gynecologic care for women with HIV infection have become important areas of concern for the primary care provider.

Evidence shows a higher prevalence of Pap smear, vaginal, and cervical abnormalities among HIV-infected women compared with uninfected women. In addition, cervical abnormalities are likely to be more severe and may progress more rapidly in women with HIV infection. Regular gynecologic examinations, including a Pap smear, are therefore an integral component of primary care for these patients. Recommendations on Pap smears for women with early HIV infection are outlined in Algorithm 6 and in the chart that follows.

- A Pap smear should be done as part of the initial gynecologic examination in all women with HIV infection. For pregnant women, Pap smears should be performed at entry into prenatal care. Women who have not received prenatal care should have a Pap smear before being discharged from the hospital following delivery. (SGE)
- Pap smears should be repeated twice in the first year; annually when the initial Pap smear is normal; every 6 months when there is a history of human papilloma virus (HPV) infection, previous Pap smear showing squamous intraepithelial lesion (SIL), or symptomatic HIV

Suggested classification of squamous epithelial cell cytologic changes

1. Atypical squamous cells of undetermined significance (specify recommended followup and/or type of further investigation).
2. Squamous intraepithelial lesions (SILs) [comment on presence or absence of cellular changes consistent with human papilloma virus (HPV) infection]:
   - Low-grade SIL, encompassing:
     Cellular changes consistent with HPV infection
     Mild dysplasia/CIN 1
   - High-grade SIL, encompassing:
     Moderate dysplasia/CIN 2
     Severe dysplasia/CIN 3
     Carcinoma in situ/CIN 3
3. Squamous carcinoma.

[1]Summarized from abstract presented at the Workshop on Terminology and Classification of Vaginal Cytology, National Cancer Institute, December 1988.

infection; after treatment of the underlying cause of an inflammation; or if no endocervical cells are seen. (SGE)

- All women, including those who are pregnant, should be referred to a trained clinician for colposcopy when: the Pap smear indicates atypical cells of undetermined significance; the Pap smear demonstrates either low- or high-grade SILs or carcinoma; there is a history of untreated SIL. (SGE)

Pregnancy Counseling

Counseling HIV-infected women with regard to reproductive issues and options should be a part of primary care practice. The counseling must focus on the health outcomes that might be expected as a result of any choice, for the mother as well as for the infant. These outcomes include the possible effects of pregnancy on the mother's health and the progression of her HIV infection; the issues pregnancy raises with regard to enrollment in clinical trials and access to new agents; the effect of HIV infection on birth outcome; the risk of HIV transmission from mother to infant; the prognosis of HIV infection in infants; and issues related to the care of children who have lost their parents.

Pregnancy counseling remains challenging because evidence shows that a woman's decision to become pregnant or to continue or terminate a pregnancy is not related in a straightforward way to the woman's HIV status and possible HIV-related outcomes. Specific recommendations include:

- Conduct contraceptive, preconceptional, and prenatal counseling for HIV-infected patients in a nondirective manner, with the focus on the woman. Listen more than talk. (SGE)
- Assess the psychological state of the patient and provide the most recent information in language she will understand, on possible effects of HIV infection and pregnancy on each other, on her current health status, transmission rates to the fetus and to sexual partners, and the need for contingency plans for future care of children. (SGE)
- Include maternal characteristics such as age, attitudes and beliefs, general health status, and pregnancy history in contraception and pregnancy counseling for HIV-infected patients. (SGE)
- Inform the patient that at present there is no direct evidence of a deleterious effect of pregnancy and childbirth on the course of early HIV infection and no consistent evidence of adverse birth outcomes in infants of women with early HIV infection. (SGE)
- Explain that breast-feeding is not recommended for HIV-infected mothers in the United States because of the risk of transmission. (SGE)
- Inform pregnant patients that the risk of perinatal HIV transmission ranges from 13 to 39 percent. (SPE)
- During counseling, discuss the long-term implications of pregnancy decisions on the family and encourage the patient to discuss these issues with significant others. (EO)
- Respect the woman's decision regarding conception and continuation or termination of pregnancy. (EO)

Caring for Adolescents with Early HIV Infection

HIV infection is spreading rapidly in the adolescent population. There are approximately 30,000 HIV-infected adolescents in the United States today.[2] Since 1988, AIDS has been the sixth leading cause of death among young persons 15 to 24 years of age in the United States. Caring for adolescents with early HIV infection presents a unique set of issues: differences in the epidemiology of HIV infection among youth; variable laws and practices regarding consent and confidentiality for minors under the age of 18; special barriers to receiving HIV care; lack of availability of age-specific clinical services; special features of the progression of HIV infection during adolescence; limited standards for routine management of HIV infected youth; difficulties in assuring adolescents' participation in research, including clinical trials; and lack of dissemination of effective models for engaging and retaining youth in HIV care and prevention efforts.

[2] Adolescents are defined as those from 13 to 21 years of age; children are those from 2 to 12 years of age; infants are those from birth to 2 years of age; and newborns are those from birth to 30 days old.

To adequately care for HIV-infected youth, primary care providers must address the barriers that prevent adolescents from accessing care, including payment, consent, and confidentiality. Providers also must be able to offer the appropriate range of laboratory tests, including Pap smears and STD screening tests.

Issues related to the care of adolescents are discussed in this section. In addition, more specific recommendations for adolescent HIV care are integrated throughout this Quick Reference Guide. Recommended drugs and dosages specific to adolescents are detailed in Tables 1, 2, and 3 (pages 21-24).

Age-specific counseling at the time of HIV testing is the first step in appropriate early care for HIV-infected adolescents. For all adolescents, support at the time of test result notification in the form of a supportive adult (parent, guardian, or other) is preferable.

Clinical assessment and care are different for adolescents than for young children or adults. History-taking, physical examination, and laboratory assessment of HIV-infected adolescents should be conducted and interpreted within the context of age-specific issues. An appropriate history should include details about sexual and drug use practices, including age of initiation, same and opposite sex experiences, sexual identity, and use of condoms or other barrier methods. Psychosocial assessment should include details of living situation, peer group associations, and school and work activities, as well as an assessment of cognitive development and psychiatric history (with attention to suicidal ideation).

The physical examination and staging of HIV infection should take into account the marked changes in body size and composition and organ function that occur during puberty. When assessing development during adolescence, use of the Sexual Maturity Rating Scale of Tanner and Whitehouse[3] is a more reliable indicator of pubertal development than is chronologic age.

Progression of HIV infection in adolescents may differ from adults. For example, HIV wasting is defined by weight loss in adults, but during puberty—when height and weight should be increasing dramatically—wasting should be characterized as a failure to gain weight. Because adolescents have the highest rates of STDs of any age group, a screening pelvic or genital examination and laboratory assessment are indicated even for asymptomatic adolescents who have had sexual intercourse.

Antiretroviral treatment should begin with pediatric dose schedules for adolescents who are Tanner stage I or II; adult dose schedules should be used for adolescents who are Tanner stage IV or V. Tanner stage III youths should be monitored particularly closely, as this is the time of most rapid growth. Pubertal changes in body composition and organ function may affect drug distribution and metabolism, thereby necessitating changes in drug dose and interval of administration.

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[3]Tanner JM. Growth at adolescence: with a general consideration of the effects of hereditary and environmental factors upon growth and maturation from birth to maturity. 2nd ed. Oxford: Blackwell Scientific Publications; 1962.

Currently, there are an estimated 15,000 to 20,000 HIV-infected infants and children in the United States. Since the screening of blood products began in 1985, perinatal HIV transmission has accounted for 85 percent of all AIDS cases in children under age 13.

Primary care providers can do much to care for these patients, including identifying at-risk infants and HIV-infected children; performing routine counseling and diagnostic tests for HIV infection; monitoring clinical and immunologic status; providing general pediatric care, including immunizations; and linking families to case management and additional counseling.

Diagnosis of HIV Infection in Infants and Children

Because the interval between infection, development of AIDS, and mortality is compressed in infants and children, the need for early diagnosis of HIV infection is crucial. Diagnostic testing of infants and children of HIV-infected mothers should be incorporated into the schedule of routine pediatric care and immunizations.

Evidence of infants born to HIV-infected mothers shows that most have clinical or immunologic abnormalities by 6 months of age. The first chart on page 17 presents the tests and timetables for determining HIV status in infants. The common clinical manifestations and HIV-associated conditions in infants and children are listed in a second chart on page 17. Because of its complexity, laboratory diagnosis of HIV-infected newborns and infants and evaluation of HIV-related central nervous system (CNS) symptoms should be done in consultation with a pediatric HIV specialist. Specific recommendations include:

- All infants born to HIV-infected mothers should be monitored to determine HIV status. (SPE)
- In the HIV-exposed infant under 18 months of age, virus culture or polymerase chain reaction (PCR) are the preferred methods for diagnosis of HIV infection. If these tests are not available, P24 antigen assays should be used. (SPE)
- One or more of these HIV-specific tests should be done as soon as possible after the infant has reached 1 month of age. If negative, testing should be repeated between 3 and 6 months of age. (SPE)
- Infants with negative diagnostic tests at 6 months of age should have an HIV antibody test (enzyme-linked immunosorbent assay, ELISA) performed at 15 and 18 months of age to document HIV infection status. (SPE)
- In the child over 18 months of age, testing for antibody to HIV using the standard ELISA test with an approved confirmatory test is sufficient for diagnosis of HIV. (SPE)

Diagnosis of infection in HIV-exposed infants

Age	Test	If test is positive	If test is negative
1 month	HIV culture or PCR[1]	Repeat test to confirm diagnosis of infection	Repeat test at age 3 to 6 months
3 to 6 months	HIV culture or PCR[1]	Repeat test to confirm diagnosis of infection	Test with ELISA at age 15 months
15 months	ELISA	Repeat test at age 18 months	Repeat test at age 18 months
18 months or older	ELISA	Child is infected[2]	Child is not infected[3]

[1] If HIV culture and PCR are unavailable, p24 antigen testing may be used after 1 month of age.

[2] Serologic diagnosis of HIV infection requires two sets of confirmed HIV serologic assays (ELISA/Western blot) performed at least 1 month apart after 15 months of age.

[3] Confirmation of seronegativity requires two sets of negative ELISAs after 15 months of age in a child with normal clinical and immunoglobulin evaluation.

Note: This chart presents recommendations only for the items reviewed by the HIV panel.

HIV-associated conditions in pediatric HIV infection

Failure to thrive
Generalized lymphadenopathy
Hepatomegaly
Splenomegaly
Persistent oral candidiasis
Parotitis
Recurrent or chronic diarrhea
Encephalopathy
Lymphoid interstitial pneumonitis (LIP)
Hepatitis
Cardiomyopathy
Nephropathy
Recurrent bacterial infections
Opportunistic infections (recurrent viral infections [herpes simplex, herpes zoster], fungal, parasitic)
Malignancies (lymphoma)

Monitoring CD4 Lymphocytes and Initiating PCP Prophylaxis and Antiretroviral Therapy

HIV infection has more adverse effects on the developing immune systems of infants and children than it does on the mature immune systems of older individuals, thus the onset of clinical symptoms and the progression of disease are more rapid in this group. It is, therefore, crucial to use a marker for immune status in younger patients so that preventive therapies can be instituted while they still can be effective. Algorithm 7 summarizes pertinent recommendations, and Tables 1, 2, and 3 list the common antiretroviral, PCP, and TB drugs used for younger age groups, and their dosages and adverse effects. Specific recommendations include:

- CD4 counts and percentages should be obtained in all infants born to HIV-seropositive mothers at 1, 3, and 6 months of age, and then at 3-month intervals until the HIV status of the child is known. (EO)
- Thereafter, CD4 counts and percentages should be monitored at 3- to 6-month intervals in children proven to be HIV-infected. (EO)
- PCP prophylaxis should be initiated if the CD4 cell count falls below age-adjusted normal values, if the percentage of CD4 cells is 20 percent or lower, or after the patient has had an episode of PCP, regardless of CD4 count. (SGE)
- Emerging data suggest that PCP prophylaxis should be initiated in at-risk and infected infants 1 month to 1 year of age, regardless of CD4 count or percentage. The drug of choice for prophylaxis is trimethoprim-sulfamethoxazole, or TMP-SMX. (SGE)
- Antiretroviral therapy should be initiated for (a) all infants and children with symptomatic HIV infection (SGE); (b) any HIV-infected infant or child whose CD4 count falls below the following age-adjusted thresholds: less than 1,750 cells/μl for infants birth to 12 months; less than 1000 cells/μl for infants 12 to 24 months; less than 750 cells/μl for children between 2 and 6 years of age; and less than 500 cells/μl for children over 6 years of age; and (c) any HIV-infected infant less than 1 year of age with a CD4 percentage of 30 or less; any child between 1 and 2 years with a CD4 percentage of 25 or less; and children of all other ages through adolescence with a CD4 percentage of 20 or less (EO).

Neurologic Testing

HIV infection in infants and children results in a wide spectrum and a high incidence of neurologic disease. In children with perinatal HIV infection, clinical signs of neurologic dysfunction may appear as early as 2 months and as late as 5 years of age. This neurologic dysfunction is caused either directly or indirectly by a primary HIV infection of the brain and is most commonly manifested in impaired brain growth; motor dysfunction; attention and memory difficulties; loss or plateau of

previously acquired milestones; and cognitive impairment.

Algorithm 8 outlines the steps in evaluating neurologic status of infants and children with early HIV infection. Specific recommendations include:

- A neurologic examination, including an age-related developmental assessment, should be performed on all HIV-exposed infants and HIV-infected infants and children at the initial assessment. A neurologic examination should be performed at each clinical visit, and an age-related developmental assessment should be done every 3 months for the first 24 months of life and every 6 months thereafter. (EO)
- Baseline computerized tomographic (CT) scan or magnetic resonance imaging (MRI) is recommended at the time of diagnosis of HIV infection in infants and children. If CNS symptoms subsequently occur, neuroimaging studies should be repeated and cerebrospinal fluid obtained for analysis. (EO)
- Serial CT or MRI scans are not indicated for the routine evaluation of HIV-infected infants and children who do not have CNS symptoms. (EO)
- After exclusion of other diagnoses, infants and children who have primary HIV CNS disease should be treated with antiretroviral therapy and referred to a pediatric neurologist, if available, or a specialist in HIV care. (SGE)
- Support and rehabilitation services, such as nutritional supplementation; physical, occupational, or speech therapies; and early intervention programs should be part of the comprehensive management of these patients. (EO)

Case Management for Persons Living with HIV

Case management for persons with HIV infection is a mechanism to facilitate provision of comprehensive health and mental health care and social support services. One of its objectives is to empower patients, family members, and significant others. It includes identifying those who need services, assessing their specific needs, developing a written care plan, implementing and monitoring the plan, reassessing and updating the plan as necessary, and terminating the plan when appropriate.

In the early stages of HIV infection, case management centers around the provision of social services, such as housing and financial assistance. As the infection progresses, the focus shifts to a greater emphasis on the provision of medical services.

Case management services can be delivered in a number of different settings, such as physician offices, community health clinics or hospitals, rehabilitation facilities, or within community-based organizations. Specific recommendations are:

- All primary care providers should be knowledgeable about the uses of case management and should develop referral mechanisms to case-management services in their community (see listing of national and State resources on pages 35 and 36 of this guide). Methods for accomplishing this include providing continuing education and training; contracting with a local or regional case-management system; or employing a case manager in the primary care setting. (EO)
- Case-management services should include intake; assessment of patient needs; development, implementation, and monitoring of a case-management plan; and periodic assessments. (EO)
- Case-management services should be comprehensive and formalized in a written care plan that sets forth which services are required, who will provide them, and within what time frame. The patient or his or her parent or guardian should be able to select the specific services required at a given time. (EO)
- Case-management programs should be directed by individuals knowledgeable about the clinical nature of HIV infection and issues affecting service delivery. (EO)
- Minimum qualifications for a case manager include a working knowledge of the disease and/or illnesses of their patients, as reported in medical and nursing assessments; knowledge of and contact with services in immediate and neighboring communities as well as with health care, social services, and public entitlement programs; resourcefulness and creativity in accessing required services; the ability to interact effectively with clients and multiple providers in all settings; and the ability to maintain a spirit of hope and to empathize with patients and their loved ones. (EO)

Conclusion

As the number of HIV-infected persons increases throughout this decade, the need for well-informed health care providers also increases. The changing geographic distribution of the disease, with HIV infection no longer concentrated in only a handful of cities but spread across the country, places increasing demands on delivery sites and providers formerly unaffected by the epidemic. Providers will need to acquire new information and skills, and public and private policymakers will need to develop new systems to meet these challenges.

This Quick Reference Guide and the Guideline from which it is drawn present recommendations for early identification and management of HIV infection in infants, children, adolescents, and adults. Early care for HIV-infected individuals can have a major effect on their quality of life and, with appropriate patient education, help stem the spread of the disease.

Table 1. Drug[1] dosage and adverse effects; Antiretroviral therapy[2]

Medication	Dosage Adult/Tanner stage IV and V adolescents[3]	Dosage Infants/children/ Tanner stage I and II adolescents[3]	Adverse effects[4]
Zidovudine (ZDV) formerly azidothymidine (AZT) Retrovir® Formulation: 100 mg capsules Pediatric syrup 50 mg/5 ml	100 mg/dose administered orally every 4 hours or 5 doses given 7 days/week	180 mg/m^2 dose administered orally every 6 hours given 7 days/week	Granulocytopenia Anemia Nausea Headache Confusion Myositis Anorexia Hepatitis Seizures Nail discoloration
Didanosine (ddI) (dideoxyinosine) Videx® Formulation: 25, 50, 100, 150 mg tablets Pediatric powder for oral solution 10 mg/ml	Patients under 45 kg: 100 mg/dose orally given every 12 hours 7 days/week Patients over 45 kg: 200 mg/dose administered orally every 12 hours given 7 days/week (Tablet should be chewed and taken on an empty stomach)	200 mg/m^2/day administered orally every 12 hours given 7 days per week	Pancreatitis, potentially fatal Peripheral neuropathy Peripheral retinal atrophy (in children only) Nausea Diarrhea Confusion Seizures
Zalcitabine (ddC) (dideoxycitidine) Formulation: 0.375 mg tablets 0.750 mg tablets Pediatric 0.1 mg/ml syrup	Patients under 45 kg: 0.375 mg/dose administered orally every 8 hours given 7 days/week Patients over 45 kg: 0.750 mg dose administered orally every 8 hours given 7 days/week	0.005-0.01 mg/kg/ dose administered orally every 8 hours given 7 days/week	Aphthous ulcers Esophageal ulcers Peripheral neuropathy Stomatitis Cutaneous eruptions Thrombocytopenia Pancreatitis

[1]Contains only drugs discussed or recommended in the *Clinical Practice Guideline for Evaluation and Management of Early HIV Infection.* Not all drugs or combinations of drugs used in the care of HIV-infected individuals are included.

[2]Dosage schedules and recommendations for use are based on review of literature or expert consensus and may not have approval of the Food and Drug Administration (FDA) for indications noted. Information included in this guideline may not represent FDA approval or FDA-approved labeling for the particular products or indications in question. Specifically, the terms "safe" and "effective" may not be synonymous with the FDA-defined legal standard for product approval.

[3]For adolescents who are Tanner stage I or II, pediatric dose schedules should be followed. Adult doses should be used for adolescents who are Tanner stage IV or V. Tanner stage III adolescents should have dose individualized, recognizing that this is the stage of most rapid growth.

[4]For a complete list of adverse reactions to these drugs, consult the *Physicians' Desk Reference* (Medical Economics Data, Montvale, NJ, 1993) or the drug's package insert.

Table 2. Drug dosage[1] and adverse effects; *Pneumocystis carinii* pneumonia prophylaxis[2]

Medication	Dosage Adult/Tanner stage IV and V adolescent[3]
Trimethoprim-Sulfamethoxazole (TMP-SMX) Bactrim® Septra® Formulations: Single-strength tablet: 80 mg TMP 400 mg SMX Double-strength tablet: 160 mg TMP 800 mg SMX Pediatric suspension: (per 5 ml) 40 mg TMP 200 mg SMX	Most commonly used regimens: one double-strength tablet taken orally three times per week on alternate days or daily 7 days per week
Pentamidine Isethionate NebuPent® 300 mg The vial must be dissolved in 6 ml sterile water and used with Respirguard® nebulizer	Aerosolized pentamidine (AP) (NebuPent®) is given as single 300 mg (one vial) dose every 4 weeks. Nebulized dose given over 30-45 min at a flow rate of 5-9 liters/min from a 40-50 lb per square inch air or oxygen source Alternative: if a Fisons ultrasonic nebulizer is used, dose of pentamidine is 60 mg given every 2 weeks after a loading dose of five treatments given over 2 weeks
Dapsone Formulation: 25 and 100 mg tablets	50-100 mg total daily oral dose divided into two doses or administered as a single daily dose given 2-7 times per week daily dose given 7 days per week

[1] Contains only drugs discussed or recommended in the *Clinical Practice Guideline for Evaluation and Management of Early HIV Infection.* Not all drugs or combinations of drugs used in the care of HIV-infected individuals are included.

[2] Dosage schedules and recommendations for use are based on review of literature or expert consensus and may not have approval of the Food and Drug Administration (FDA) for indications noted. Information included in this guideline may not represent FDA approval or FDA-approved labeling for the particular products or indications in question. Specifically, the terms "safe" and "effective" may not be synonymous with the FDA-defined legal standard for product approval.

Dosage Infants/children/ Tanner stage I and II adolescents [3]	Adverse effects [4]
150 mg/m^2 TMP 750 mg/m^2 SMX Total oral daily dose given 3 times/week Can be divided into two doses or administered as a single daily dose and given on 3 consecutive or 3 alternate days per week This same oral daily dose divided into 2 doses can be given 7 days per week	Drug allergy: Skin rash Steven-Johnson syndrome Fever Arthralgia Toxic epidermal necrolysis Hematologic: Anemia Neutropenia Thrombocytopenia Gastrointestinal: Elevation of serum transaminase Nausea Vomiting Anorexia Fulminant hepatic necrosis (rare)
Children over 5 yr can receive same inhalation dose as adults	Pulmonary: Bronchospasm with cough Pneumothorax Other: Extrapulmonary *P. carinii* infection Increased risk of environmental transmission of *M. tuberculosis*
1 mg/kg administered orally as a single daily dose given 7 days per week	Hematologic: Agranulocytosis Aplastic anemia Hemolytic anemia in G6PD deficiency Methemoglobinemia Cutaneous reactions: Bullous and exfoliative dermatitis Erythema nodosum Erythema multiforme Peripheral neuropathy Gastrointestinal: Nausea Vomiting

[3] For adolescents who are Tanner stage I or II, pediatric dose schedules should be followed. Adult doses should be used for adolescents who are Tanner stage IV or V. Tanner stage III adolescents should have dose individualized, recognizing that this is the stage of most rapid growth.

[4] For a complete list of adverse reactions to these drugs, consult the *Physicians' Desk Reference* (Medical Economics Data, Montvale, NJ, 1993) or the drug's package insert.

Table 3. Drug[1] dosage and adverse effects; Preventive therapy (chemoprophylaxis) for *Mycobacterium tuberculosis*[2]

Medication	Dosage: Adult/Tanner stage IV and V adolescents[3]	Dosage: Infants/children/ Tanner stage I and II adolescents[3]	Adverse effects[4]
Isoniazid INHR Nydrazid® Formulation: 50 mg, 100 mg, 300 mg tablets 1 gram vial Syrup 50 mg/5 ml	300 mg administered orally as a single daily dose given 7 days/wk for 12 mo or 900 mg administered orally as a single daily dose given 2 days/week for 12 mo	10-15 mg/kg/day (max 300 mg/day) administered orally as a single daily dose given 7 days/wk for 12 mo	Gastrointestinal: Hepatotoxicity (rare in children) Nausea, vomiting, anorexia Neurologic: Peripheral neuropathy Neuritis, fatigue Weakness Hematologic: Agranulocytosis Hemolytic and aplastic anemia Thrombocytopenia Eosinophilia Drug Allergy: Skin rash Fever Lymphadenopathy and vasculitis (SLE-like syndrome)

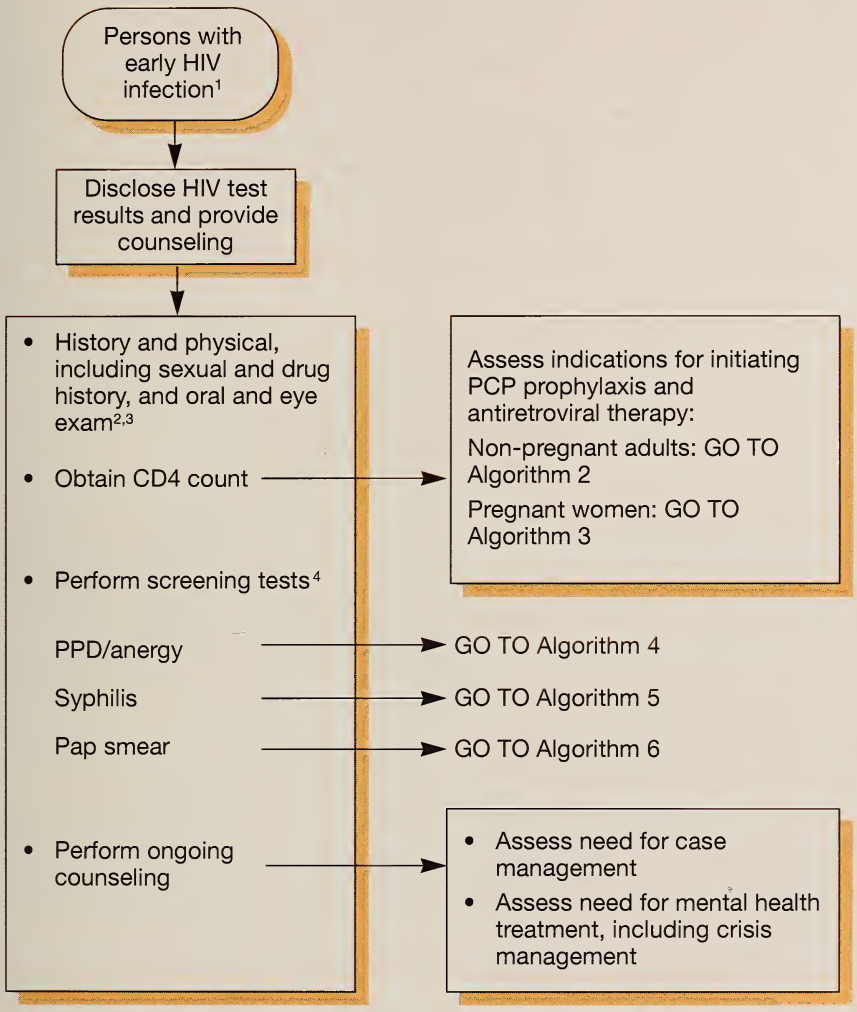
[1] Contains only drugs discussed or recommended in the *Clinical Practice Guideline for Evaluation and Management of Early HIV Infection.* Not all drugs or combinations of drugs used in the care of HIV-infected individuals are included.

[2] Dosage schedules and recommendations for use are based on review of literature or expert consensus and may not have approval of the Food and Drug Administration (FDA) for indications noted. Information included in this guideline may not represent FDA approval or FDA-approved labeling for the particular products or indications in question. Specifically, the terms "safe" and "effective" may not be synonymous with the FDA-defined legal standard for product approval.

[3] For adolescents who are Tanner stage I or II, pediatric dose schedules should be followed. Adult doses should be used for adolescents who are Tanner stage IV or V. Tanner stage III adolescents should have dose individualized, recognizing that this is the stage of most rapid growth.

[4] For a complete list of adverse reactions to these drugs, consult the *Physicians' Desk Reference* (Medical Economics Data, Montvale, NJ, 1993) or the drug's package insert.

Algorithm 1. Selected Elements of the Initial and Ongoing Evaluation of Adults with Early HIV Infection


Persons with early HIV infection[1]
Disclose HIV test results and provide counseling
• History and physical, including sexual and drug history, and oral and eye exam[2,3]
• Obtain CD4 count
Assess indications for initiating PCP prophylaxis and antiretroviral therapy:
Non-pregnant adults: GO TO Algorithm 2
Pregnant women: GO TO Algorithm 3
• Perform screening tests[4]
PPD/anergy
GO TO Algorithm 4
Syphilis
GO TO Algorithm 5
Pap smear
GO TO Algorithm 6
• Perform ongoing counseling
• Assess need for case management
• Assess need for mental health treatment, including crisis management

[1] Provider should review and evaluate the adequacy of HIV diagnostic tests.

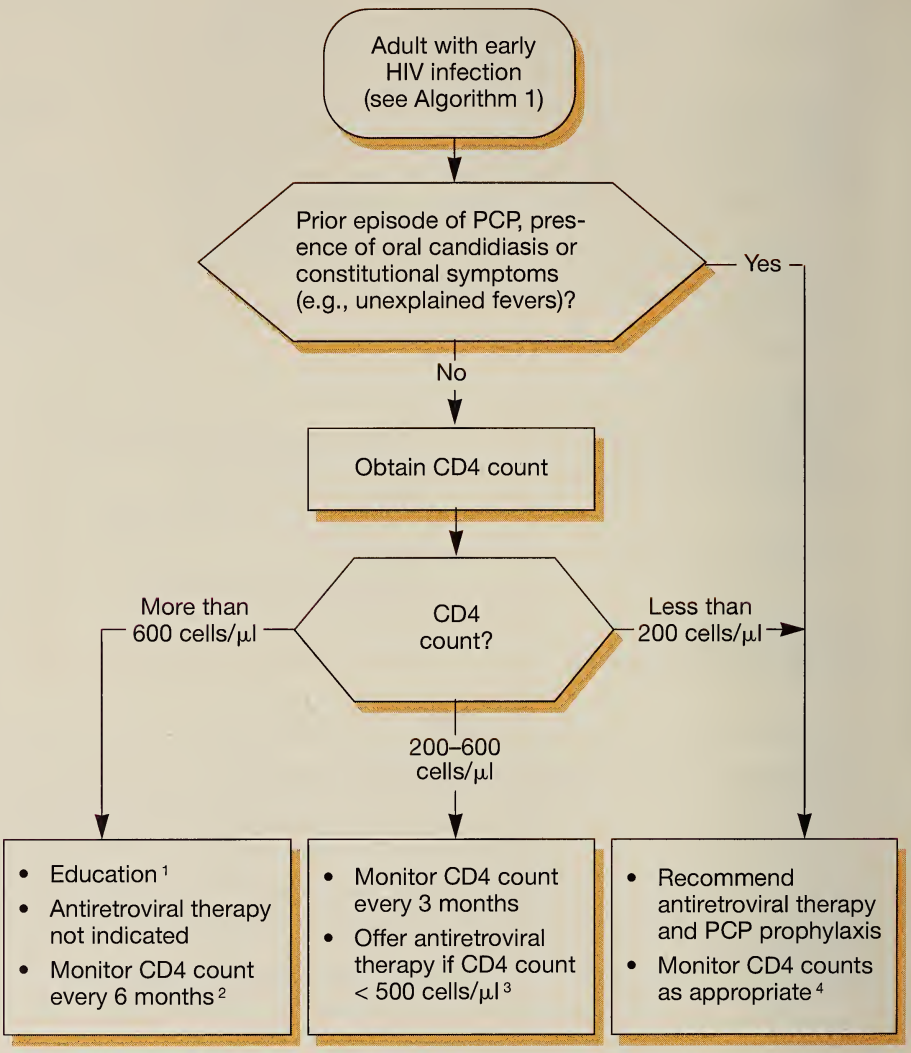
[2] Appropriate immunizations should be provided (this topic was not reviewed by the HIV panel).

[3] Schedule followup appropriate for patient's condition.

[4] Many other screening tests were not reviewed by this panel, including toxoplasmosis, hepatitis serology, and routine laboratory tests.

Note: The algorithm presents recommendations only for the items reviewed by the HIV Panel.

Algorithm 2. Evaluation for Initiation of Antiretroviral Therapy and PCP Prophylaxis; Men and Nonpregnant Women with Early HIV Infection


Adult with early HIV infection (see Algorithm 1)
Prior episode of PCP, presence of oral candidiasis or constitutional symptoms (e.g., unexplained fevers)?
Yes
No
Obtain CD4 count
CD4 count?
More than 600 cells/μl
Less than 200 cells/μl
200–600 cells/μl
• Education [1]
• Antiretroviral therapy not indicated
• Monitor CD4 count every 6 months [2]
• Monitor CD4 count every 3 months
• Offer antiretroviral therapy if CD4 count < 500 cells/μl [3]
• Recommend antiretroviral therapy and PCP prophylaxis
• Monitor CD4 counts as appropriate [4]

[1] Education should include a discussion of enrollment into relevant investigational drug trials for asymptomatic persons.

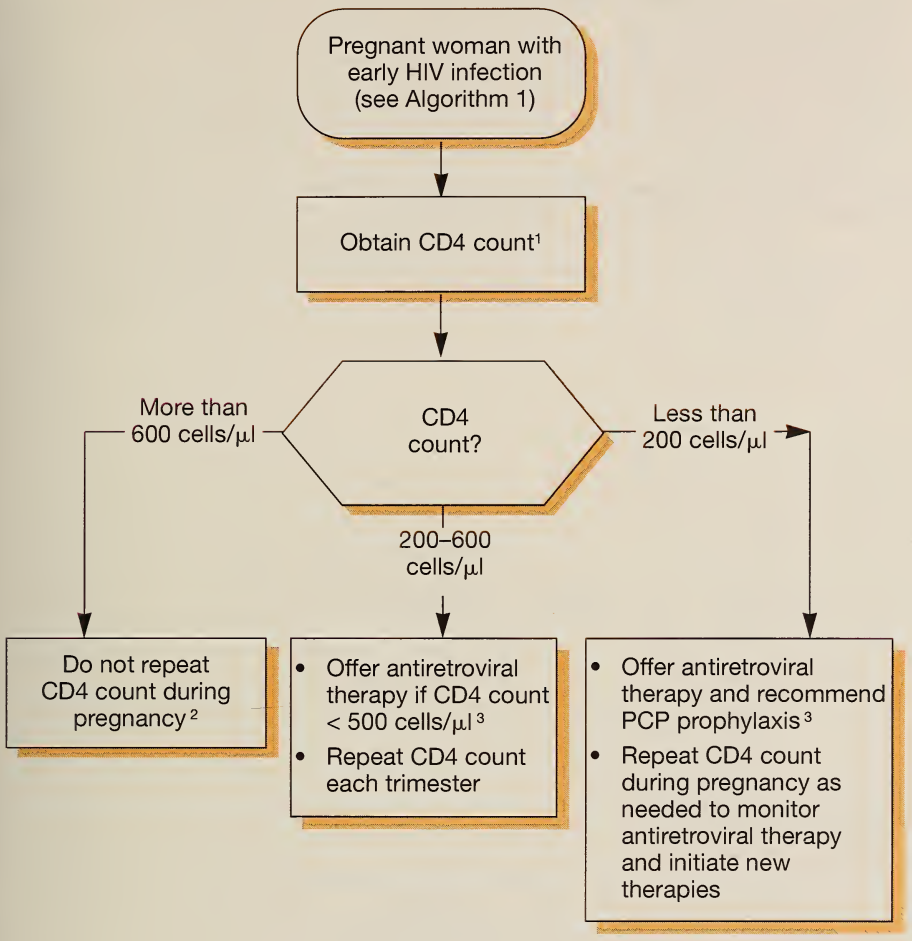
[2] If CD4 count has shown great variability or is rapidly declining, repeat the CD4 within 3 months.

[3] If patient develops symptoms, recommend antiretroviral therapy.

[4] If CD4 count < 200 cells/μl, continued monitoring of CD4 counts may be needed to determine eligibility for clinical trials, and prophylaxis for opportunistic infections other than PCP and to guide antiretroviral therapy.

Note: The algorithm presents recommendations only for the items reviewed by the HIV panel.

Algorithm 3. Evaluation for Initiation of Antiretroviral Therapy and PCP Prophylaxis; Pregnant Women with Early HIV Infection


Pregnant woman with early HIV infection (see Algorithm 1)
Obtain CD4 count[1]
CD4 count?
More than 600 cells/μl
Less than 200 cells/μl
200–600 cells/μl
Do not repeat CD4 count during pregnancy[2]
• Offer antiretroviral therapy if CD4 count < 500 cells/μl[3]
• Repeat CD4 count each trimester
• Offer antiretroviral therapy and recommend PCP prophylaxis[3]
• Repeat CD4 count during pregnancy as needed to monitor antiretroviral therapy and initiate new therapies

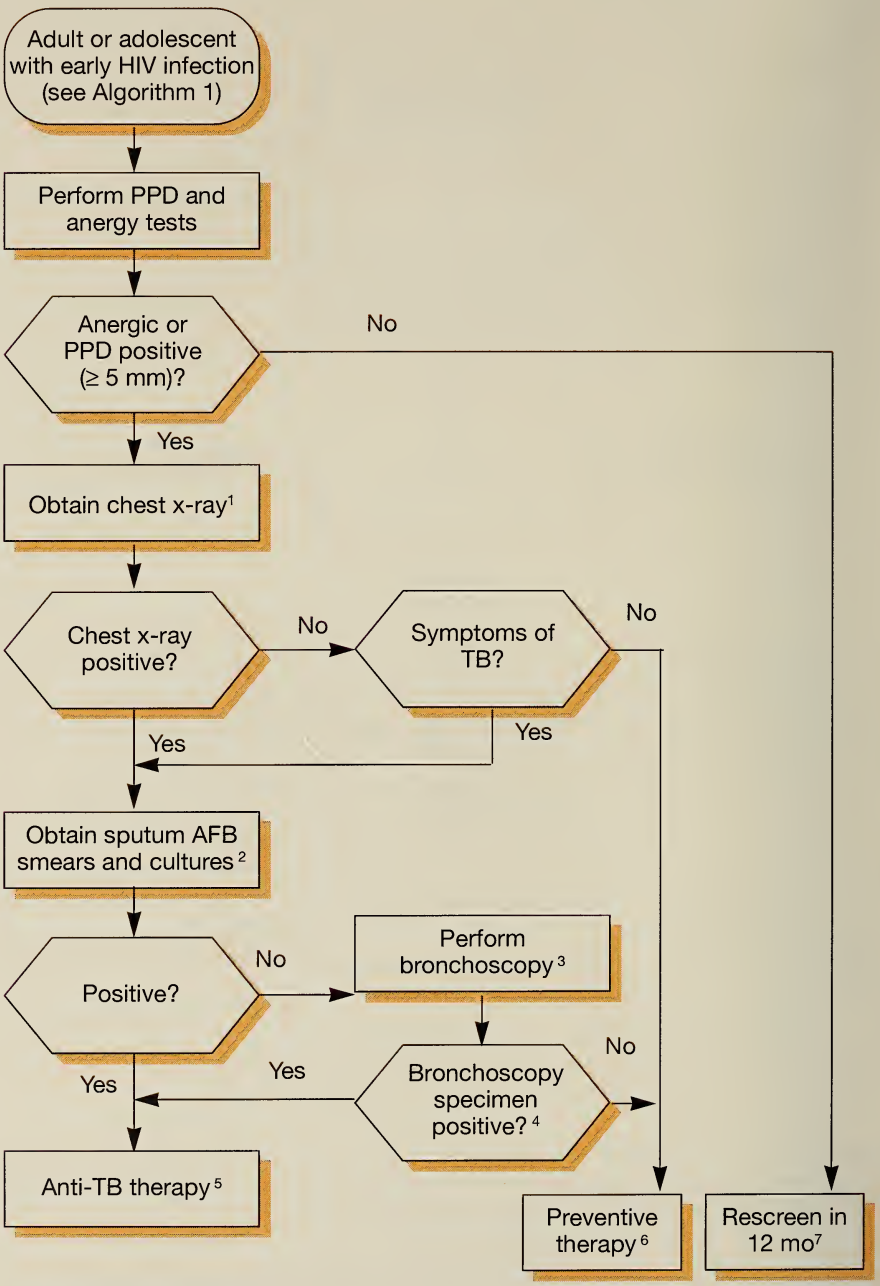
[1] CD4 count should be obtained on presentation for prenatal care; women who have received no prenatal care should have CD4 counts taken at delivery.

[2] Unless indicated by the presence of clinical symptoms.

[3] The possible benefits and risks of antiretroviral therapy to both mother and fetus should be discussed fully with the patient.

Note: The algorithm presents recommendations only for the items reviewed by the HIV panel.

Algorithm 4. Evaluation for *Mycobacterium tuberculosis* Infection in Adults and Adolescents with Early HIV Infection



[1] Chest x-ray can be performed, using a lead apron shield, after the first trimester in pregnant women asymptomatic for TB or at any stage of pregnancy in women symptomatic for TB.

[2] At least three sputum smears and cultures should be obtained.

[3] If there is no other etiology for the abnormal chest x-ray.

[4] Both AFB smears and cultures should be obtained at bronchoscopy.

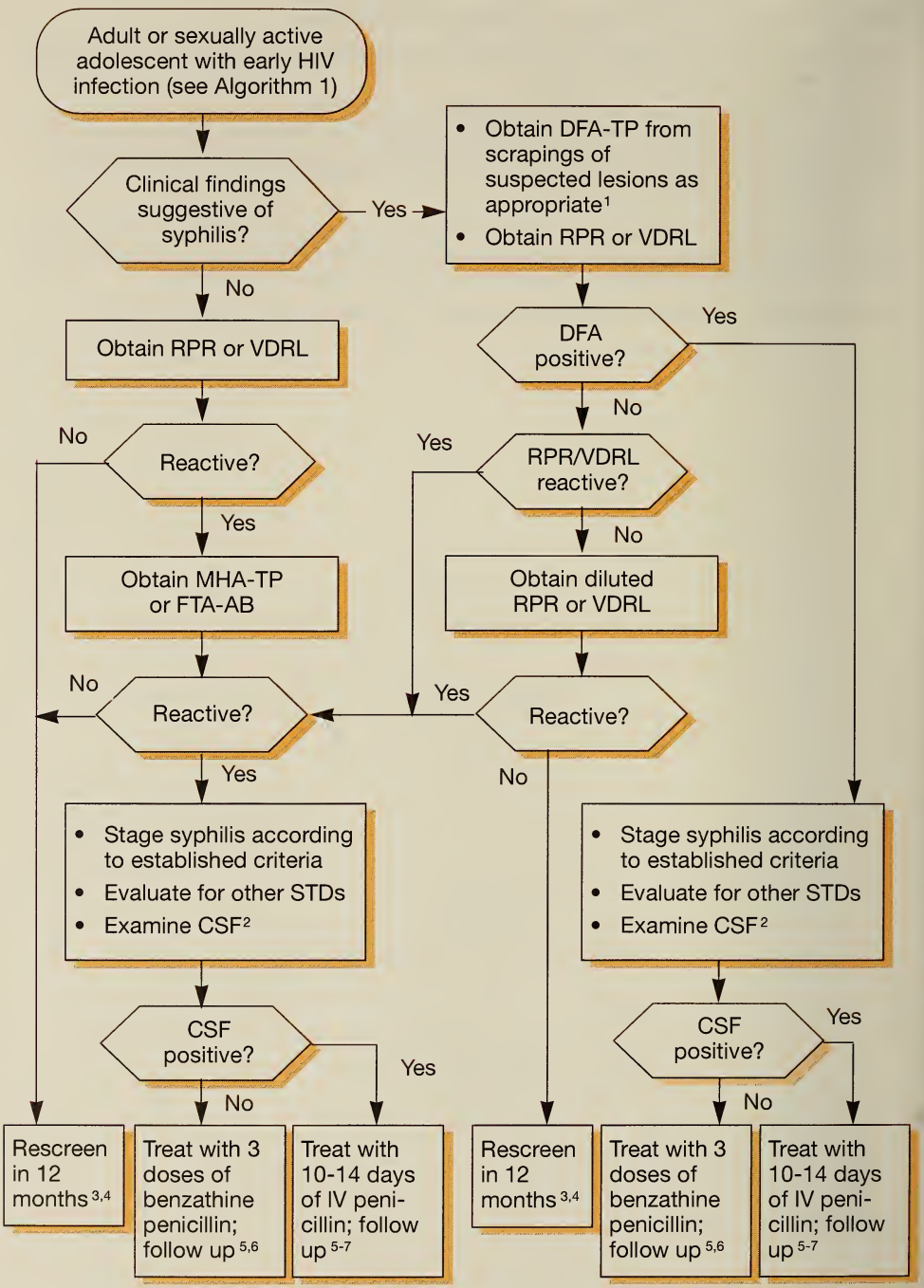
[5] Anti-TB therapy should be guided by local susceptibility patterns and modified appropriately when isolated susceptibilities become available.

[6] Preventive therapy is indicated for PPD-positive patients and should be strongly considered for anergic patients who are known contacts of patients with TB and for anergic patients belonging to groups in which the prevalence of TB is at least 10 percent (e.g., injection drug users, prisoners, homeless persons, persons in congregate housing, migrant laborers, and persons born in foreign countries with high rates of TB).

[7] Individuals who reside in settings where TB prevalence is high should be retested in 6 months; individuals who are exposed acutely to others with suspected or confirmed TB should be retested in 3 months; anergic individuals need not be retested, except in special circumstances.

Note: The algorithm presents recommendations only for the items reviewed by the HIV panel.

Algorithm 5. Evaluation for Syphilis in Adults and Sexually Active Adolescents with Early HIV Infection



[1] If dark-field exam cannot be performed and primary syphilis is suspected, empiric treatment should be instituted.

[2] Treatment for neurosyphilis recommended if the CSF cannot be evaluated (See *Guideline for Evaluation and Management of Early HIV Infection* for recommended followup).

[3] Or after exposure to or diagnosis of any sexually transmitted disease.

[4] Pregnant women should be screened for syphilis at entry to prenatal care, during the third trimester, or at delivery.

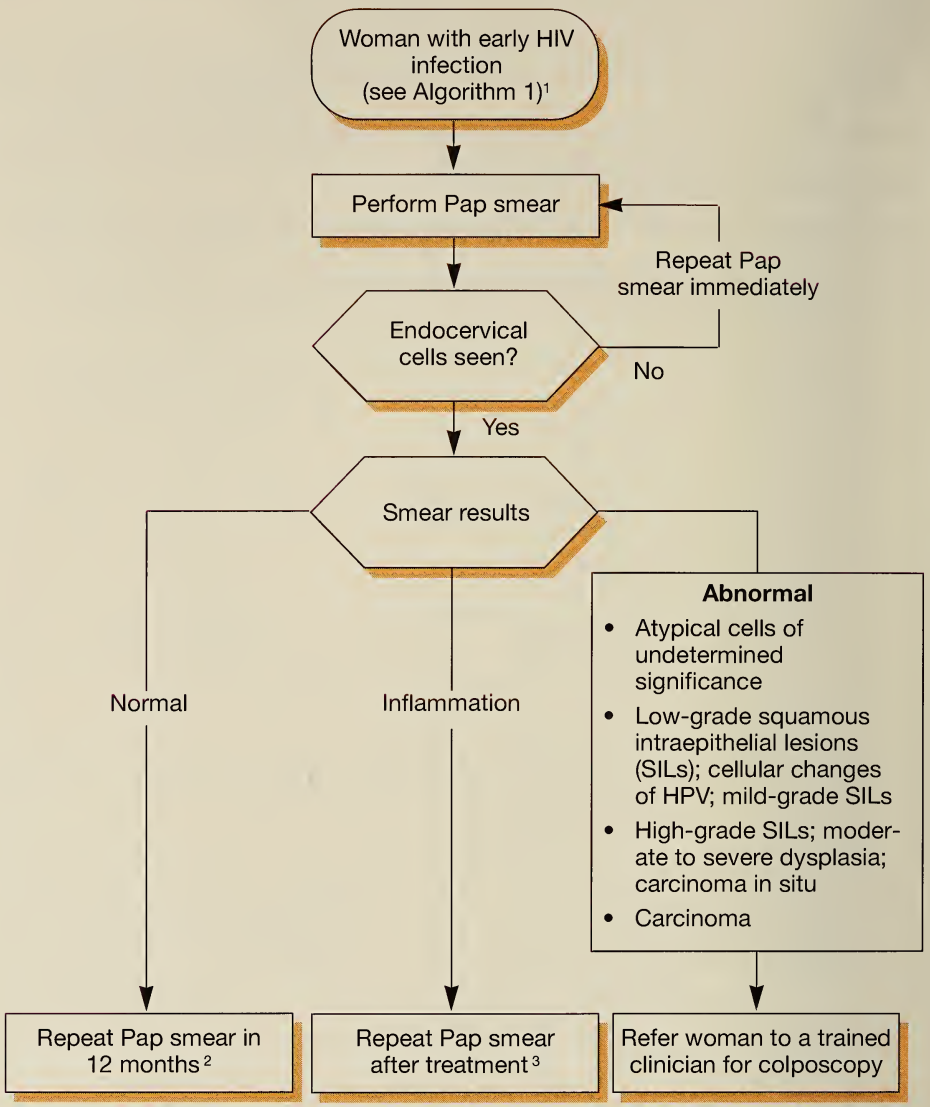
[5] See *Guideline for Evaluation and Management of Early HIV Infection* for recommended followup.

[6] For issues specific to pregnant women, see *Guideline for Evaluation and Management of Early HIV Infection* for recommended followup.

[7] Alternative treatments include 10 days of IM procaine penicillin or 10-14 days of 1-2 g of IM ceftriaxome.

Note: The algorithm presents recommendations only for the items reviewed by the HIV panel.

Algorithm 6. Pap Smears in Women with Early HIV Infection


Woman with early HIV infection (see Algorithm 1)[1]
Perform Pap smear
Repeat Pap smear immediately
Endocervical cells seen?
No
Yes
Smear results
Normal
Inflammation
Abnormal
• Atypical cells of undetermined significance
• Low-grade squamous intraepithelial lesions (SILs); cellular changes of HPV; mild-grade SILs
• High-grade SILs; moderate to severe dysplasia; carcinoma in situ
• Carcinoma
Repeat Pap smear in 12 months[2]
Repeat Pap smear after treatment[3]
Refer woman to a trained clinician for colposcopy

[1] Pap smears should be performed at entry to prenatal care for pregnant women and prior to discharge for women who present for delivery without prenatal care.

[2] HIV-infected women with a history of human papilloma virus (HPV) or with previous Pap smears showing SILs should have their Pap smears repeated every 6 months.

[3] Treatment should be guided by diagnosis of the cause of inflammation.

Note: The algorithm presents recommendations only for the items reviewed by the HIV panel.

Algorithm 7: Evaluation for Initiation of Antiretroviral Therapy and PCP Prophylaxis; Infants and Children with Early HIV Infection

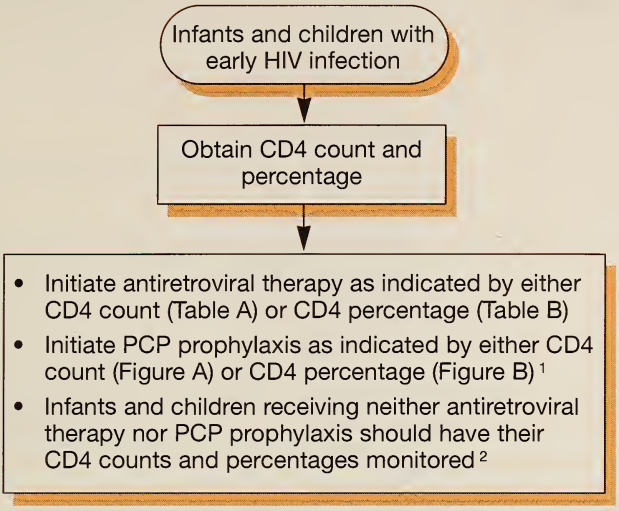

Infants and children with early HIV infection
Obtain CD4 count and percentage
• Initiate antiretroviral therapy as indicated by either CD4 count (Table A) or CD4 percentage (Table B)
• Initiate PCP prophylaxis as indicated by either CD4 count (Figure A) or CD4 percentage (Figure B) [1]
• Infants and children receiving neither antiretroviral therapy nor PCP prophylaxis should have their CD4 counts and percentages monitored [2]

Figure A

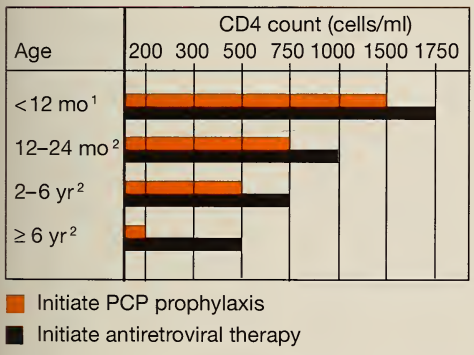
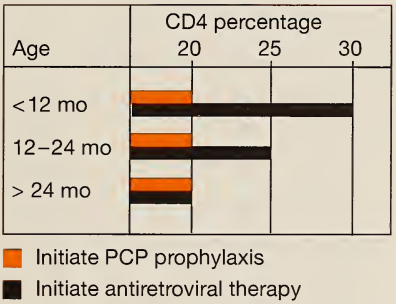


Figure B



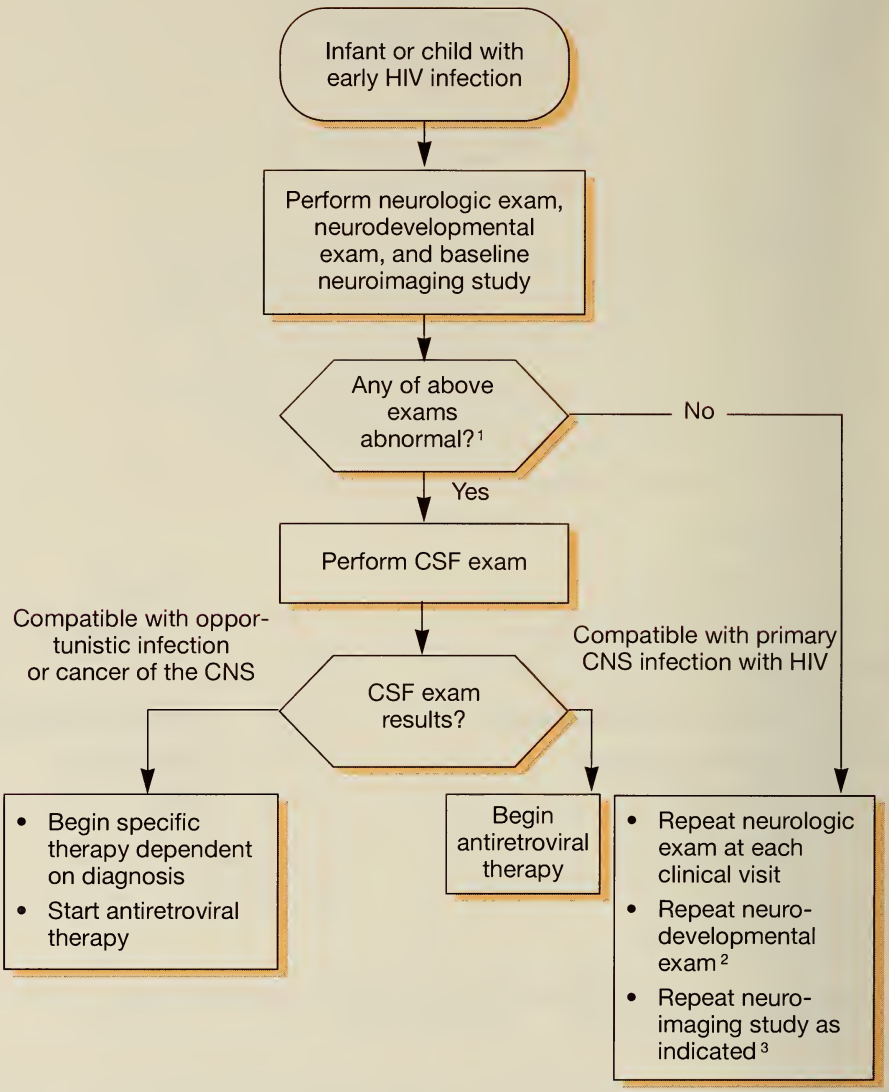
Source: Figure A adapted from Centers for Disease Control and Prevention, 1991.

[1] Patients with prior episode of PCP should receive PCP prophylaxis regardless of CD4 count and percentage.

[2] Obtain CD4 count and percentage at 1 month of age, 3 months of age, and then at 3-month intervals through 24 months of age; thereafter obtain CD4 count and percentage every 6 months, unless values reach an age-related threshold where testing should be repeated monthly.

Note: The algorithm presents recommendations only for the items reviewed by the HIV panel.

Algorithm 8. Neurologic Evaluation of Infants and Children with Early HIV Infection


Infant or child with early HIV infection
Perform neurologic exam, neurodevelopmental exam, and baseline neuroimaging study
Any of above exams abnormal?[1]
No
Yes
Perform CSF exam
Compatible with opportunistic infection or cancer of the CNS
Compatible with primary CNS infection with HIV
CSF exam results?
• Begin specific therapy dependent on diagnosis
• Start antiretroviral therapy
Begin antiretroviral therapy
• Repeat neurologic exam at each clinical visit
• Repeat neurodevelopmental exam[2]
• Repeat neuroimaging study as indicated[3]

[1] Abnormal exam is defined as focal pathology, obstructive lesion, atypical CNS manifestations, or evidence of progressive neurologic disease (see *Guideline for Evaluation and Management of Early HIV Infection).*

[2] Neurodevelopmental exams should be performed at 3-month intervals up to 24 months of age, then every 6 months thereafter.

[3] Neuroimaging studies should be performed if CNS symptoms occur; such studies should be performed in conjunction with CSF analysis.

Note: The algorithm presents recommendations only for the items reviewed by the HIV panel.

Sources of HIV information

General information:

English: 800-342-AIDS (2437)
Spanish: 800-344-7432
TDD Service for the Deaf: 800-243-7889

General information for health care providers:

HIV Telephone Consultation Service: 800-933-3413

State hotlines:

For information about HIV-specific resources and counseling and testing services, call your State AIDS hotline:

Alabama	800-228-0469
Alaska	800-478-2437
Arizona	800-548-4695
Arkansas	501-661-2133
California (No.)	800-367-2437
California (So.)	800-922-2437
Colorado	800-252-2437
Connecticut	800-342-2437
Delaware	800-422-0429
District of Columbia	202-332-2437
Florida	800-352-2437
Georgia	800-551-2728
Hawaii	800-922-1313
Idaho	208-345-2277
Illinois	800-243-2437
Indiana	800-848-2437
Iowa	800-445-2437
Kansas	800-232-0040
Kentucky	800-654-2437
Louisiana	800-922-4379
Maine	800-851-2437
Maryland	800-638-6252
Massachusetts	800-235-2331
Michigan	800-827-2437
Minnesota	800-248-2437
Mississippi	800-537-0851
Missouri	800-533-2437
Montana	800-233-6668
Nebraska	800-782-2437
Nevada	800-842-2437
New Hampshire	800-324-2437
New Jersey	800-624-2377
New Mexico	800-545-2437
New York	800-541-2437
North Carolina	800-733-7301
Ñorth Dakota	800-472-2180
Ohio	800-332-2437
Oklahoma	800-535-2437
Oregon	800-777-2437
Pennsylvania	800-662-6080
Puerto Rico	800-765-1010
Rhode Island	800-726-3010
South Carolina	800-322-2437
South Dakota	800-592-1861
Tennessee	800-525-2437
Texas	800-299-2437
Utah	800-366-2437
Vermont	800-882-2437
Virginia	800-533-4148
Virgin Islands	809-773-2437
Washington	800-272-2437
West Virginia	800-642-8244
Wisconsin	800-334-2437
Wyoming	800-327-3577

For HIV/AIDS treatment information, call:

The American Foundation for AIDS Research
800-39AMFAR (392-6327)

AIDS Treatment Data Network
212-268-4196

AIDS Treatment News
800-TREAT 1-2 (873-2812)

For information about AIDS/HIV clinical trials conducted by National Institutes of Health and Food and Drug Administration-approved efficacy trials, call:

AIDS Clinical Trials Information Service (ACTIS)
800-TRIALS-A (874-2572)

To locate a physician, call your local or State Medical Society

For more information about HIV infection, call:

Drug Abuse Hotline
800-662-HELP (4357)

Pediatric and Pregnancy AIDS Hotline
212-430-3333

National Hemophilia Foundation
212-219-8180

Hemophilia and AIDS/HIV Network for Dissemination of Information (HANDI)
800-42-HANDI (424-2634)

National Pediatric HIV Resource Center
800-362-0071

National Association of People with AIDS
202-898-0414

Teens Teaching AIDS Prevention Program (TTAPP)
National Hotline:
800-234-TEEN (8336)

Note: This is not an all-inclusive list. For other sources of information, contact your State HIV hotline listed on page 35.

Abstract

This *Quick Reference Guide for Clinicians* contains highlights from the *Clinical Practice Guideline on Evaluation and Management of Early HIV Infection,* which was developed by a private-sector panel of health care providers and consumers. Selected aspects of evaluating and managing patients, both adults and children, who are in the early stages of human immunodeficiency virus infection are presented. Topics covered include disclosure of HIV status, monitoring of CD4 lymphocyte counts, prevention of *Pneumocystis carinii* pneumonia and infection with *Mycobacterium tuberculosis,* initiation of antiretroviral therapy, treatment of syphilis, eye and oral care, performance of Papanicolaou smears, diagnosis of HIV infection in infants and children, preventive therapy for PCP and assessment of neurologic problems in HIV-infected children, pregnancy counseling, and development of a comprehensive case management system. Algorithms are included that show the sequence of events related to evaluating and managing early HIV infection in adults and children, as well as drug dosing tables for antiretroviral, PCP, and *M. tuberculosis* therapies.

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U.S. Department of Health and Human Services
Public Health Service
Agency for Health Care Policy and Research
Executive Office Center, Suite 501
2101 East Jefferson Street
Rockville, MD 20852

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